IBM

International Business Machines Corporation

P.O. Box 100
Kingston, N.Y. 12401
914/383-0123
Direct Dialing Number 383

October 9, 1981

RECEIVED
OCT 13 1981
NEW JERSEY

INPUT
Park 80 Plaza West-1
Saddlebrook, New Jersey 07662

Attention: Mr. Edward Metz
Vice President

Dear Sir:

We are pleased to submit for your approval the attached contract.

If you are in agreement with the terms and conditions of this contract, please sign and date one copy and return it to me at the above address.

Very truly yours,

CFMarkle
C. F. Markle
Sr. Contracts Specialist
Dept. 65G 014

CFM:er
Enc.

International Business Machines Corporation

Neighborhood Road
Kingston, N. Y. 12401
914/383-0123
Direct Dialing Number 383

September 30, 1981

INPUT
Park 80 Plaza West-1
Saddlebrook, New Jersey 07662

Attn: Mr. Edward I. Metz, Vice President

Dear Mr. Metz:

This letter sets forth your agreement with International Business Machines Corporation (IBM) whereby INPUT will render services to the System Products Division of IBM, subject to the following terms and conditions:

1. Scope of Work

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   As a part of the work product, INPUT will deliver to IBM the items listed in Appendix B.

2. Term of Service

   The term of this Agreement shall be from October 1, 1981 through December 31, 1981.

3. Compensation

   a. IBM shall pay INPUT $47,500.00 for its services hereunder of which $23,750.00 shall be paid upon execution of this Agreement and the remainder at completion of the project. In addition, all other expenses (including living and travel) will be billed at cost and shall not exceed $2,400.00; making a total maximum commitment of $49,900.00.

In the event of termination or INPUT's inability to perform, IBM shall be obligated to pay INPUT only that portion of the total amount above specified as the shortened term of the Agreement bears to the full original term.

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INPUT will submit invoices to IBM as outlined in Item 3a above; IBM shall make payments to INPUT within thirty (30) days after receipt of the invoice, accompanied by vouchers evidencing such expenses.

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For a period of two (2) years from the date of disclosure, INPUT agrees to hold all such Confidential Information in trust and confidence for IBM and not to use such Confidential Information other than for the benefit of IBM, except as may be authorized by IBM in writing, for such period of time. INPUT agrees not to disclose any such Confidential Information, by publication or otherwise, to any person other than those persons whose services INPUT requires who have a need to know such Confidential Information for purposes of carrying out the terms of this Agreement, and who agree in writing to be bound by, and comply with, the provisions of this section.

Upon termination or expiration of this Agreement, INPUT will return to IBM all written or descriptive matter, including but not limited to drawings, blueprints, descriptions, or other papers, documents, tapes or any other media which contain any such Confidential Information. In the event of a loss of any item containing such Confidential Information, INPUT shall promptly notify IBM in writing.

INPUT agrees to secure all writings, documents and other media that embody such Confidential Information in locked files at all times when not in use to prevent its loss or unauthorized disclosure, and to segregate such Confidential Information at all times from the material of others. IBM agrees to pay all reasonable costs incurred by INPUT in accomplishing the foregoing. All such costs must be agreed to, in writing, by IBM prior to any expenditure by INPUT.

6. Rights in Data

All of the deliverable items specified in Appendix B of this Agreement, shall belong exclusively to IBM and shall be deemed to be works made for hire. To the extent that any of the deliverable items may not, by operation of law, be works made for hire, INPUT hereby assigns to IBM the ownership of copyrights, registrations and similar protection which may be available in the deliverable items. INPUT agrees to give IBM or its designees all assistance reasonably required to perfect such rights.

To the extent that any pre-existing materials are contained in the deliverable items, INPUT grants to IBM an irrevocable, non-exclusive, world-wide, royalty-free license to: (1) use, execute, reproduce, display, perform, distribute (internally or externally) copies of, and prepare derivative works based upon, such pre-existing materials and derivative works thereof, and (2) authorize others to do any, some or all of the foregoing.

7. Warranties

INPUT represents and warrants that INPUT is under no obligation or restriction nor will INPUT assume any such obligation or restriction which would in any way interfere or be inconsistent with, or present a conflict of interest concerning, the services to be furnished by INPUT under this Agreement.

INPUT represents and warrants the originality of the deliverable items recited in Appendix B and that no portion of the deliverable items, or their use or distribution, violates or is protected by any copyright or similar right of any third party.

In providing its services under this Agreement, INPUT understands that IBM does not wish to receive from INPUT any information which may be considered confidential and/or proprietary to INPUT and/or to any third party. INPUT represents and warrants that any information disclosed by INPUT to IBM is not confidential and/or proprietary to INPUT and/or to any third party.

8. General Provisions

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13. New York Law

This Agreement shall be construed, and the legal relations between the parties hereto shall be determined, in accordance with the law of the State of New York.

If the foregoing is in accordance with your understanding, will you please indicate your agreement by dating, signing, and returning to Mr. C. F. Markle, Sr. Contracts Specialist, at the above address, the enclosed copy of this letter.

Very truly yours,

INTERNATIONAL BUSINESS
MACHINES CORPORATION

By: C. K. Howe

C. K. Howe
Manager of Site Operations

CKH:blh

AGREED TO:

INPUT

By: Edward J. Metz

Title: VICE PRESIDENT

Date: 10/15/81

APPENDIX A

1. Asynchronous Display Terminal Industry Perspectives

   a. Scope

   - The scope of this study is limited to asynchronous display terminals using the ASCII character set.

   - Four major perspectives will be developed:

     - Industry structure - including the distribution framework, the pricing levels within the distribution channels and terminal function differentiations.

     - Vendor perspectives - including major strategies, the sources of supply, and the industry coverage by major vendor.

     - Outlook - including product trends, pricing trends, the timing of major changes in product or pricing, and the impact of other products.

     - Industry statistics - produce a ten-year chart of shipments (1976-1986) by functional differentiation. In addition, show current percentages along the various distribution channels.

   b. Methodology

   - Data will be gathered initially from a variety of secondary resources including other relevant INPUT studies.

   - Original data will be gathered by means of interviews with 12 to 18 vendors or other parties knowledgeable in this marketplace.

     - These interviews will be used to corroborate and/or modify the data collected from other sources.

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Appendix A Cont.

- A best efforts attempt will be made to interview the president, marketing vice president or product manager at the appropriate companies.

- IBM will never be mentioned.

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2. Intermediaries Requirements for Asynchronous Display Terminals

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   - This study is to determine the product requirements of buying organizations that reside in the distribution chain between the terminal manufacturer and the ultimate end user.

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       1) Systems Integration (SI): A company that purchases display terminals for inclusion into their product or system. This company may or may not manufacture some of its own hardware but most likely adds its own software thereby orienting the system to a particular industry. The system is directed towards the general data processing marketplace.

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Appendix A Cont.

- This study is to determine the intermediaries:
  - Applications
  - Hardware used and typical configurations
  - End users served
    - Industry
    - Geographic constraints
    - Company size - sales/employees/etc.
  - Purchasing process
    - Evaluation procedures
    - Price and brand sensitivity
  - Service requirements
  - Product requirements
    - Functions
    - Size
    - Human factors
    - Reliability
    - Response time
  - View of the future
    - Expansion to new areas
    - Outlook for asynchronous displays
    - Competition
    - New product developments and timing

b. Methodology

- Data will be gathered using telephone interviews primarily.
  - On-site interviews will be used as deemed necessary.
- Thirty (30) interviews will be conducted with the various types of intermediary organizations as follows:
  - SI 15
  - VAD 15
- It is anticipated that no more than three local on-site interviews will be conducted.
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APPENDIX B

3. Deliverables

- INPUT will orally present the results of either or both study sections at a date and time mutually agreeable to IBM and INPUT between December 1 and December 11, 1981.

  - Five copies of the presentation will be delivered at the presentation.

- INPUT will deliver ten copies of a two volume report to IBM, the volumes corresponding to the two study sections described in this proposal, no later than December 31, 1981.

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CFM:er
Enc.

10/14
ED/ Note underlined ¶'s on pgs. 2,3 & 9
On pg 9 I would like to change "No later than" to "on or about." This affects date on pg 1.
Henry

International Business Machines Corporation

Neighborhood Road
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Very truly yours,

INTERNATIONAL BUSINESS
MACHINES CORPORATION

By: C. K. Howe

C. K. Howe
Manager of Site Operations

CKH:blh

AGREED TO:

INPUT

By:__________________________

Title:________________________

Date:_________________________

APPENDIX A

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  - End users served
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    - Company size - sales/employees/etc.
  - Purchasing process
    - Evaluation procedures
    - Price and brand sensitivity
  - Service requirements
  - Product requirements
    - Functions
    - Size
    - Human factors
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CONFERENCE CALL
12|1|81

DUANE BOWMAN — BNR
HUNTER, METZ, GRUGAN — INPUT

- Hunter spokesman
- [redacted] .... 14K + 2K invoices are submitted for payment
- 40K
-
- Deliverables:
  - SPSS TAPE
  - QUESTIONAIRRE

Argument:

SPSS should have been used & would have been used if response rate had been higher.

- VIDEOTAPE ....
- COMPANY NAMES .... EIM will handle this
  - FOCUS GROUP ...... several hundred
  - MAIL Q .... 2500+

M4

IBM

- Old Group
  - Dean Hunter
  - Harvey ~~Shapiro~~ Kranich
  - Bert Shapiro
- New Group in place
- New Group wants to know follow-on strategy for 3101
- See
- Document by 9/9/81 <
- Followed by meeting on 9/11 – 9/12
- Contract 9/21/81

OBJECTIVE: Gather information to assess market fit of 3101 and follow-on 3101 Strategy.

CONSULTANT "IN-HOUSE"

1. For the TTY industry

   also 82-86 forecast

   - What were the '79, '80, '81 shipments by function group/level

   - What is the division of sales among the major manufacturers

2. For top 5 suppliers

   - DEC
   - DATA GENERAL
   - H/P

   - what are their shipments by model
   - manufacturers may or may not build processors
   - what are their distribution channels
   - include DEC and Data General — if they don't fit in to top 5, then add

   DEC Pull through

   132 character wide screen importance

3. What are the top 3 "up and coming" companies

   ITOH TELEVIDEO

   - what is their product line
   - which products are selling best
   - what are their distribution channels
   - what is their "claim to fame"

4. What are the industry trends in terms of function

   old study: Level I, Level II, Level III

   - dumb --- smart --- intelligent --- programmable

   - how will prices and margins be related to function groups [INPUT definitions ... to be discussed]

5. Industry Sales to end users vs. distributors, vs integrators, etc. — 3rd Party, Service Bureau, RCS, Turnkey — DISTRIBUTION MODELS

6. Industry Pricing structure/strategy

   - discount structure
   - end user vs. intermediary (distributor, 3rd party)
   - trends especially by function group

THOUGHTS:
- Repackaging — IS IT NECESSARY

IMPACT OF $400 DISPLAYS on HIGHER PRICED

7. Sources of supply   Components Assembly

- Are there industry shifts in the sources of supply
    * new vendors
    * other countries
- What are the implications in the next 5 years
    * cost/price
    * new product opportunities
    * technology
    * etc.

9. TTY Shipments - by year

Function Level	History 75 - 81	Project 82 - 86
	Quantities	

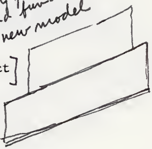
10. Price Trends - by year

Function Level	History 75 - 81	Project 82 - 86
	Unit price or % charge	

15. Examples of

Price Trends through the life of a product (p 30-31 Input Mkt.)] - modify price - add function or new model

Function enhancements during life of product]



STRATEGY 16. In what sequence will manufacturers add function? What will their timing be?

in broadest sense

incl.
- color [redacted]
- screen size
- programmability

17. How do DEC and HP distribute terminals to end users?

[redacted] [redacted]

18. MAINTENANCE

- WHAT OPTIONS ARE OFFERED BY "TOP 5"

(matrix of maintenance option by manufacturer)

	OPTION ......
Vendor ⋮	

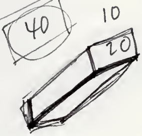
IBM CONFIDENTIAL

PRODUCT REQUIREMENTS FOR 3101 FOLLOW ON

Survey Information from 3rd Parties — Integrators, T/S, Systems Houses

1. Applications

    - identify application
    - # terminals/system
    - make/mode of CPU
    - who are the end-users
    - trends through '86



2. ~~Customer and~~ 3rd Party Sensitivity to

    - Price
    - Reliability/Availability
    - Service
    - Brand name
    - Display: image quality, reflection/glare
    - Ergonomics
      Tilt, swivel, height, keyboardlayout
    - Tailorability

3. Terminal Requirements

    - Amount of intelligence/function

        * which functions
          edit, text, color, graphics, basic language, etc.
        * when - timing
        * function in head vs. processor

    + Screen size

    + Response time
    + Price

DATA

TIME FRAME

o MUST BE COMPLETED BY DECEMBER
1ST HALF (DECEMBER 1)

o PROGRESS MEETINGS

o 2 Seperate proposals

Firm Bid Estimate 9/4 a 9/9

CONTRACT 9/21 - 25

- OCT
- NOV } 10
- DEC

AN INDUSTRY STUDY

OF

ASYNCHRONOUS DISPLAY TERMINALS

FOR

INTERNATIONAL BUSINESS MACHINES CORPORATION

KINGSTON, NEW YORK

DECEMBER 11, 1981

THE STUDY

- The study is limited to asynchronous display terminals using the ASCII character set.

- It is divided into two distinct phases.

  - Phase I - Industry Perspectives

  - Phase II - Intermediaries Requirements

- The scope and methodology of each is discussed in the next slides.

PHASE I

- Topic: INDUSTRY PERSPECTIVE
- Scope: To survey the market from the vendor's perspective.
  - Industry structure including distribution framework, discount structure and terminal features
  - Vendor perspectives including coverage by major vendor
  - Vendor outlook and trends
  - Forecast of shipments
- Methodology:
  - Secondary research
  - Telephone interviews with 12 vendors
  - Interviews with top management

PHASE II

- Topic: INTERMEDIARIES' REQUIREMENTS
- Scope: To determine the product requirements of distributors to end users
  - Principal buying units are:
    - Systems integrators
    - Value-added distributors
  - Information including:
    - Applications and end users
    - Hardware used
    - Purchasing process
    - Product requirements
    - Service requirements
    - Product trends
- Methodology:
  - 3 on-site interviews
  - 28 telephone interviews
  - Total of 31 interviews
    - 20 systems integrators
    - 11 value-added distributors

ASYNCHRONOUS DISPLAY TERMINAL TYPES

LEVEL 1:

- Dumb Terminal
- No Special Features
- May Have Numeric Keypad
- May Have Separable Keyboard

LEVEL 2:

- Smart Terminal
- Full Editing, Formatting, Paging And Other Features
- Not Programmable

LEVEL 3:

- Smart Terminal
- Full Editing As In Level 2
- Vendor Programmable

LEVEL 4:

- Smart Terminal
- Full Editing As In Level 3
- User Programmable

DISTRIBUTION FRAMEWORK

VENDOR OPINIONS OF 1980 ASYNCHRONOUS DISPLAY TERMINAL SHIPMENTS (UNITS IN THOUSANDS)

		EST. SALES		EST. DISTRIBUTION BY TYPE		
VENDOR	EST. 1980 TOTAL SHIPMENTS	OEM	END-USER	LEVEL 1	LEVEL 2	LEVELS 3 AND 4
A	440	264	176	150	190	100
B	410	246	164	150	170	80
C	400	320	80	*	*	*
D	400	320	80	150	160	90
E	400	280	120	200	160	40
F	400	240	160	150	160	90
G	400	240	160	150	160	90

*Not sure, but sees a growing shift to programmable terminals

DISTRIBUTION FRAMEWORK

VENDOR OPINIONS OF 1980 ASYNCHRONOUS DISPLAY TERMINAL SHIPMENTS

(UNITS IN THOUSANDS)

		EST. SALES		EST. DISTRIBUTION BY TYPE		
VENDOR	EST. 1980 TOTAL SHIPMENTS	OEM	END-USER	LEVEL 1	LEVEL 2	LEVELS 3 AND 4
H	355	213	142	130	140	85
I	300-350	180-210	120-140	110	120	70
J	300	180-195	105-120	110	120	70
K	**	**	**	*	*	*
Averages	381-386	248-253	131-134	144	153	89
Percentages	100%	65%	35%	38%	40%	23%

*Not sure, but sees a growing shift to programmable terminals
**No estimates

VENDOR ESTIMATES OF THE
LEADING MANUFACTURERS OF ASYNCHRONOUS DISPLAY TERMINALS

	NUMBER OF MENTIONS IN RANKING						
MANUFACTURER	ONE TO FIVE	ONE	TWO	THREE	FOUR	FIVE	SIX OR SEVEN
Lear-Siegler	7	4	1	0	2	0	0
ADDS	6	0	4	2	0	0	1
DEC	5	3	1	0	0	1	0
Hazeltine	5	0	1	3	1	0	0
Televideo	4	0	1	0	2	1	1
IBM	3	1	0	1	1	0	0
Data General	2	0	0	1	0	1	0

VENDOR ESTIMATES OF LEADING MANUFACTURERS'
MARKET SHARE, 1980 SHIPMENTS, AND OEM/END-USER RATIOS

MANUFACTURER	RESPONDENT	ESTIMATED 1980 SHIPMENTS (000)	ESTIMATED MARKET SHARE (PCT)	ESTIMATED OEM/END USER RATIOS (PCT)	
				OEM	END-USER
Lear-Siegler	A	60	20%	50%	50%
	B	40	9%	N/C	N/C
	C	100	25%	N/C	N/C
	D	50	12%	N/C	N/C
	E	50	14%	60%	40%
ADDS	A	30	10%	60%	40%
	B	32.5	7%	N/C	N/C
	C	30-35	8%	N/C	N/C
	D	100	25%	N/C	N/C
	E	45	10%	N/C	N/C
	F	45	10%	75%	25%
DEC	A	70	26%	60-70%	30-40%
	B	30	10%	N/C	N/C
	C	152	43%	75%	25%

INPUT

VENDOR ESTIMATES OF LEADING MANUFACTURERS'
MARKET SHARE, 1980 SHIPMENTS, AND OEM/END-USER RATIOS
(CONTINUED)

MANUFACTURER	RESPONDENT	ESTIMATED 1980 SHIPMENTS (000)	ESTIMATED MARKET SHARE (PCT)	ESTIMATED OEM/END USER RATIOS (PCT)	
				OEM	END USER
Hazeltine	A	30-35	7%	N/C	N/C
	B	30	10%	65-75%	25-35%
	C	40	10%	N/C	N/C
Televideo	A	30-40	10%	N/C	N/C
IBM	A*	200+	50%+	5-10%	90-95%
	B	10	3%	N/C	N/C

N/C = NO COMMENT

* = RESPONDENT'S ESTIMATE IS FOR ALL CRT'S SHIPPED

VENDOR PERCEPTIONS OF MANUFACTURERS NOT RANKED IN TOP TEN

Ann Arbor	• Has 5% Of Market
Hazeltine	• In Top 20 • 1980 Shipments Of 25-30K • 50-50 OEM/End User Sales Ratio
IBM	• Has 5% Of Market • In Top 20 Now, Will Be In Top 10 In Two Years
Televideo And C. Itoh	• Belong In Top 10
Volker-Craig	• Belongs In Top 25

VENDOR PERCEPTIONS OF IBM'S MARKET POSITION

- IBM will be in top 10 within two to three years.
- IBM has had no real impact in the past two years.
- IBM is a very strong participant.
- IBM may be significant in the future, but not today.
- Independents understand the market better. This is not an IBM market.
- IBM does not know how to sell like a mail order house.
- IBM's product is too expensive for the features it has.

VENDOR PROJECTIONS OF 1981-1982 ASYCHRONOUS DISPLAY TERMINAL SHIPMENT GAINS

- Vendors generally anticipate 10-27% shipment gains in 1981 versus 1980.
  - 1980 over 1979 increases ranged from 5-20% or more
  - Range of 1980 shipments, 5,500 to 50,000 units
  - Range of projected 1981 shipments, 7,000 to 55,000 units
- One large vendor anticipates a 100% increase.
- Small vendors expect fourfold gains.
- Overall, vendors expect shipments of basic units to rise 5-10% and customized units 20% or more
- Four respondents forecast 1982 increases ranging from 11-100%

SHIPMENT AND DISCOUNT CHARACTERISTICS

VENDOR	SHIPMENT CHARACTERISTICS BY ORDER SIZE	SHIPMENT DISTRIBUTION PERCENTAGES	DISCOUNT SCHEDULES
A	N/C	1980: 60% Systems Integrators 20% Distributors 20% End-Users 1981: N/C	N/C
B	1-25 Units: End-Users Over 500 Units: Systems Integrators and Distributors	1980: 50% Systems Integrators 40% Distributors 10% End-Users 1981: N/C	N/C
C	N/C	1980: 80% Systems Integrators and Distributors 1981: Same	N/C

INPUT

SHIPMENT AND DISCOUNT CHARACTERISTICS

(CONTINUED)

VENDOR	SHIPMENT CHARACTERISTICS BY ORDER SIZE	SHIPMENT DISTRIBUTION PERCENTAGES	DISCOUNT SCHEDULES
D	1-50 Units: End-User Over 500 Units: Systems Integrators and Distributors	1980: N/C 1981: 30% Systems Integrators 40% Distributors 30% End-Users	Over 500 Units-25% 500 or Less-0
E	Average order is 50-75 Units	1980: 30% Dealers 20% Systems Integrators 30% Distributors 20% End-Users 1981: Same	Discounts begin at 300 units.
F	N/C	1980: 66% Dealers 20% Systems Integrators 13% Distributors 1% End-Users 1981: Same	N/C

INPUT

SHIPMENT AND DISCOUNT CHARACTERISTICS
(CONTINUED)

VENDOR	SHIPMENT CHARACTERISTICS BY ORDER SIZE	SHIPMENT DISTRIBUTION PERCENTAGES	DISCOUNT SCHEDULES
G	1-50 Units: Systems Integrators and Distributors 51 or More Units: Systems Integrators, Distributors, or End-Users.	1980: 15% Systems Integrators 45% Distributors 40% End-Users 1981: Same	30-40%
H	N/C	1980: 15% Systems Integrators 15% Distributors 70% End-Users 1981: 5% Systems Integrators 5% Distributors 90% End-Users	1-50 Units-10-20% 51-100 Units-20% Over 100 Units-75%

SHIPMENT AND DISCOUNT CHARACTERISTICS
(CONTINUED)

VENDOR	SHIPMENT CHARACTERISTICS BY ORDER SIZE	SHIPMENT DISTRIBUTION PERCENTAGES	DISCOUNT SCHEDULES
I	Try for minimum order of 250 Units annually	1980: N/C 1981: 20% Systems Integrators 80% Distributors	N/C
J	Try for minimum order of 250 units annually.	80%+ to OEM's	50 or Less- 0 51-100 Units- 30% Over 100 Units - Negotiable
K	200+ Units - Systems Integrator 501+ Units - Distributors 350+ Units - End-Users	1980: N/C 1981: 60-70% Distributors	Under 100 Units- 0 101-500 Units - 25-30% Over 500 Units - 40%

VENDOR PERCEPTION OF PRODUCT
FEATURE AND OPTION TRENDS

ATTRIBUTE	RESPONDENTS' PRODUCT TRENDS THROUGH 1986	BEST SELLING OPTIONS	TRENDS IN OPTIONS AND FEATURES	PRODUCTS PLANNED	MAJOR MARKET TRENDS
Intelligence and/or Programmability	6	-	1	2	5
Color Graphics	3	-	-	-	1
Color	1	3	4	2	2
Graphics	-	2	-	-	1
Standardization of Features	4	-	5	-	-
Emulation	2	1	-	-	1

MAINTENANCE

VENDOR	WHO MAINTAINS	WHO SELLS CONTRACT	MONTHLY SERVICE CHARGE	
			ON-SITE	DEPOT
A	MFR	MFR	$7.50	$7.50*
B	MFR	MFR	N/A	13% PER MAIL-IN
C	MFR	MFR	N/C	N/C
D	MFR	REPS	N/C	N/C
E	3RD PARTY	MFR	1%	BELOW 1%
F	3RD PARTY	MFR	N/C	N/C
G	MFR OR DISTRIBUTOR	MFR OR DISTRIBUTOR	N/C	1-1.5%
H	MFR OR REPRESENTATIVES	REPRESENTATIVES	0.1%	N/A
I	MFR OR DEALER	REPRESENTATIVES	0.1%	N/A
J	MFR OR REPRESENTATIVES	REPRESENTATIVES	N/C	N/C
K	MFR, DISTRIBUTOR OR 3RD PARTY	ANY	0.1%	FEE PER MAIL-IN

* = $7.50/MONTH INCLUDES BOTH

N/A = NOT AVAILABLE

N/C = NO COMMENT

INPUT

VENDOR PERCEPTIONS OF EMERGING COMPETITORS

VENDOR NAME	NUMBER OF MENTIONS
Hazeltine	3
Televideo	3
ADDS	2
DEC	2
IBM	2

VENDOR PERCEPTIONS OF JAPANESE COMPETITION
IN ASYNCHRONOUS DISPLAY TERMINAL MARKET

COMMENTS:

- Japanese will have very big market.
- Japanese could be very strong, as they were with televisions.
- Asians, in general, (especially Koreans) will impact U.S. market.
- Potential future impact; no impact yet.
- Getting bigger every day.
- Their features are great.
- American companies are too well entrenched.
- "How will they service their products?"
- French (Telematique) will also be a factor.

INDEPENDENT VENDORS' SHIPMENTS
OF ASYNCHRONOUS DISPLAY TERMINALS BY DISPLAY TYPE
1978-1986 (UNITS IN THOUSANDS, ESTIMATED)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	AAGR (PCT.)
Level 1	65	80	97	114	130	140	150	155	160	11.5%
Level 2	65	85	107	131	165	200	240	290	350	23.4%
Levels 3 And 4	40	45	56	75	105	145	195	265	345	30.9%
TOTAL	170	210	260	320	400	485	585	710	855	22.4%
Replacements	-	-	5	15	35	50	75	110	150	
Yearend Installed Base	450	660	915	1,215	1,580	2,015	2,525	3,125	3,830	30.7%

INDUSTRY SPECIALIZATION BY SYSTEM INTEGRATORS

INDUSTRY OR APPLICATION	RESPONDENTS NUMBER	RESPONDENTS PERCENT
Government (State, Local, Federal)	5	25%
Financial/Accounting/Brokerage	4	20%
Distribution	2	10%
Legal	2	10%
Communications	1	5%
Computer-Aided Dispatching	1	5%
Construction	1	5%
Data Acquisition	1	5%
Mailing Lists	1	5%
Market Research	1	5%
Medical	1	5%
Personnel	1	5%
Power Utilities	1	5%
Process Control	1	5%
Publishing	1	5%
Software	1	5%
Training Systems	1	5%

SOURCE OF TERMINALS PURCHASED BY SYSTEMS INTEGRATORS

SOURCE	PERCENTAGE
Manufacturer Only	65%
Manufacturer And/Or Price/Volume Distributor	20%
Price/Volume Distributor Only	15%
Value-Added Distributor	0%

HARDWARE VENDORS
MENTIONED BY SYSTEMS INTEGRATORS

VENDOR NAME	NUMBER OF MENTIONS FOR CPUs	NUMBER OF MENTIONS FOR TERMINALS
Digital Equipment	6	3
Data General	4	3
IBM	3	
Hewlett Packard	3	
Honeywell	2	
Lear-Siegler		3
Televideo		3
Hazeltine		2
Ontel		2

SOURCE OF SYSTEM SOFTWARE

SOURCE	PERCENTAGE
Systems Integrator	50%
CPU Manufacturer	30%
Systems Integrator And CPU Manufacturer	10%
Other Vendor	10%

PURCHASE AND DELIVERY PATTERNS FOR SYSTEMS INTEGRATORS

	SYSTEMS INTEGRATORS' ORDERING PATTERNS		VENDOR'S DELIVERY PATTERNS	
RESPONDENT	AVERAGE ORDER SIZE (UNITS)	ORDER PERIOD	NO. OF UNITS	SHIPPING INTERVAL
A*	2,400-3,600	Annually	200-300	Monthly
B	500	Annually	As Needed	As Needed
C	400	Annually	As Ordered	Monthly
D	200-300	Annually	As Ordered	As Ordered
E	200-300	Annually	As Ordered	As Ordered (With CPU)
F	200	Annually	As Ordered	As Ordered
G	175	45 Ordered Each Quarter	As Ordered	As Ordered
H	150	Annually	150	45-60 ARO
I*	100	Annually	10	Monthly
J	100	Annually	As Ordered	As Ordered

*These respondents identified themselves as both systems integrators and distributors.

PURCHASE AND DELIVERY PATTERNS FOR SYSTEMS INTEGRATORS

	SYSTEMS INTEGRATORS' ORDERING PATTERNS		VENDOR'S DELIVERY PATTERNS	
RESPONDENT	AVERAGE ORDER SIZE (UNITS)	ORDER PERIOD	NO. OF UNITS	SHIPPING INTERVAL
K	20	Bimonthly	10	Monthly
L	12-15	Monthly	12-15	Monthly
M	32	Annually	As Ordered	As Ordered
N	4	Monthly	4	Monthly
O*	3	Monthly	3	Immediately
P	6	Irregular	6	60 ARO
Q	2-3	Monthly	2-3	Immediately
R	2	Monthly	2	120 ARO
S	20	Annually	As Ordered	As Ordered
T	10	Annually	As Ordered	As Ordered

*These respondents identified themselves as both systems integrators and distributors.

RANKING OF TERMINAL SELECTION CRITERIA BY SYSTEMS INTEGRATORS

CRITERION	AVERAGE RANK*
Reliability	1.4
Maintenance	1.7
Price	1.8
Ergonomics/Human Factors	1.9
Display Manufacturer	2.6
Response Time	3.3
Terminal Size	3.6

*1 = Very Important
5 = Not Important

PRIORITY ASSIGNMENT OF
TERMINAL SELECTION CRITERIA
BY SYSTEMS INTEGRATORS

CRITERION	AVERAGE PRIORITY
Reliability	1.7
Price	1.9
Display Manufacturer	2.5
Ergonomics/Human Factors	2.8
Maintenance	2.9
Terminal Size	5.6
Response Time	5.7

TERMINAL SELECTION CRITERIA PRIORITIES FOR SYSTEMS INTEGRATORS

CRITERION	PRIORITY								
	1	2	3	4	5	6	7	NO PRIORITY	NO RESPONSE
Display Manufacturer	3	1	2	1	1	0	0	11	1
Price	2	5	2	0	0	0	0	10	1
Reliability	6	4	2	0	0	0	0	7	1
Terminal Size	0	0	0	0	1	2	0	16	1
Response Time	0	1	0	0	0	0	3	15	1
Maintenance	0	6	2	2	0	1	0	8	1
Ergonomics/Human Factors	3	3	2	2	2	0	0	7	1

OTHER INFLUENCES ON DISPLAY TERMINAL SELECTION
MENTIONED BY SYSTEMS INTEGRATORS

INFLUENCE	RESPONDENTS NUMBER	RESPONDENTS PERCENTAGE
Reliability/Maintainability	5	25%
Senior Management Of Systems Integrator Firm	4	20%
Customer Requirement Or Choice	3	15%
Systems Engineer's Recommendation	3	15%
Vendor's Reputation	3	15%
Corporate Policy: Deal With One Vendor Only	3	15%
Price	2	10%
Ease Of Programming	1	5%
Ergonomics/Human Factors	1	5%
Features	1	5%
Customer Selection From Systems Integrator's Inventory	1	5%

RELATIVE IMPORTANCE OF TERMINAL FEATURES TO SYSTEMS INTEGRATORS

FEATURE	AVERAGE RANK*	RESPONDENTS' COMMENTS
Screen Size	2.3	• 11" x 12" Is Popular • 24 x 80 Characters Is Standard • "Large" Is Preferred • 132 Character Width Is Desirable
Separable Keyboard	2.3	• Preferred Because It Is A Space Saver • Not Always Important
Ambient Light Reflection	2.3	• Ability To See Is Important • Importance Becomes Apparent After Customer Begins Using The Terminal

RELATIVE IMPORTANCE OF TERMINAL FEATURES TO SYSTEMS INTEGRATORS

FEATURE	AVERAGE RANK*	RESPONDENTS' COMMENTS
Blinking Cursor	2.5	• Easy To Distinguish From Underline Character
Reverse Video	2.7	
Tilt And Swivel	3.1	
Audibility Of Keystroke	3.1	
Phosphor Color	3.2	
Cursor Type	3.3	

*1 = Very Important
5 = Not Important

TERMINAL HARDWARE MAINTENANCE RESPONSIBILITY

MAINTAINER(S)	RESPONDENTS NUMBER	RESPONDENTS PERCENTAGE
Manufacturer And Systems Integrator	8	40%
Terminal Manufacturer Only	5	25%
Manufacturer And Third Party	4	20%
Systems Integrator And Third Party	2	10%
Systems Integrator Only	1	5%

TERMINAL HARDWARE MAINTENANCE RESPONSIBILITY
AMONG SYSTEMS INTEGRATORS

MAINTAINER(S)	HOW PROVIDED					TOTALS	
	DEPOT ONLY	ON-SITE ONLY	BOTH	VARIES	DO NOT KNOW	#	%
Manufacturer And Systems Integrator	0	4	1	2	0	7	35%
Manufacturer	0	4	0	0	3	7	35%
Manufacturer And Third Party	0	0	2	1	0	3	15%
Systems Integrator And Third Party	1	0	1	0	0	2	10%
Systems Integrator Only	0	1	0	0	0	1	5%
TOTAL: Number	1	9	4	3	3	20	
TOTAL: Percent	5%	45%	20%	15%	15%	100%	100%

OTHER SERVICES PROVIDED BY SYSTEMS INTEGRATORS

SERVICE	RESPONDENTS NUMBER	RESPONDENTS PERCENTAGE
End-User Training	16	80%
Programming	12	60%
Installation	6	30%
Systems Analysis	3	15%
Consultation	2	10%
Documentation	2	10%

FACTORS ENHANCING ATTRACTIVENESS
OF ASYNCHRONOUS DISPLAY TERMINALS
TO SYSTEMS INTEGRATORS

FACTOR	RESPONDENTS NUMBER	RESPONDENTS PERCENTAGE
Price	12	60%
Expanded Features	9	45%
- Color		
- Graphics		
Reliability/Maintainability	8	40%
Compatibility	4	20%

HOW SYSTEMS INTEGRATORS' TERMINAL PRODUCT NEEDS WILL CHANGE OVER THE NEXT FIVE YEARS

INCREASING REQUIREMENTS FOR:

- Variety of products
- High resolution graphics
- Audio response
- More local intelligence
- Graphic input ("writing pads")
- Terminals for specialized applications:
  - Greek characters for engineering and scientific applications
  - APL character set
  - 126-character line
- Color and black and white printers
- Touch sensitive keys and panels
- Light pens

SYSTEMS INTEGRATORS' PERCEPTIONS OF MARKET SECTOR TRENDS 1981-1986

- Non-intelligent terminals will still be useful as simple input devices - also, users lack the sophistication to use personal computers

- Microprocessors seen as vehicles for increasing function and flexibility

- Integration of diskettes and rigid disks into terminals

- Personal computers will not affect the marketplace adversely

- High resolution graphics and color graphics will become available at lower cost

VENDORS WHOSE TERMINALS
ARE CARRIED BY DISTRIBUTORS

VENDOR NAME	RESPONDENTS
Digital Equipment Corporation	6
Hazeltine	5
DataMedia	4
Lear-Siegler	4
Applied Digital Data Systems	2
IBM	2
Perkin-Elmer	2

PURCHASE AND DELIVERY PATTERNS FOR DISTRIBUTORS

	DISTRIBUTORS' ORDERING PATTERNS		VENDORS' DELIVERY PATTERNS		
RESPONDENTS	AVERAGE ORDER SIZE (UNITS)	ORDER PERIOD	NO. OF UNITS	SHIPPING INTERVAL	DISTRIBUTORS' TYPICAL CUSTOMER ORDER (UNITS)
A	2,000	Annually (Ongoing)	75-80	Biweekly	5-10
B	125	Monthly	125	Monthly	100
C	Ongoing	(Ships Approx. 2,000 a Yr.)			3-4
D	500	Annually	40	Monthly	1-20
E	500	Annually	40	Monthly	1-20
F	70	Monthly	70	Monthly	3
G	30-50	Monthly	30-50	Monthly	4
H	10-30	Monthly	10-30	Monthly	10

INPUT

RANKING OF TERMINAL SELECTION CRITERIA BY DISTRIBUTORS

CRITERION	AVERAGE RANK*
Reliability	1.4
Price	1.5
Display Manufacturer	1.8
Maintenance	1.9
Response Time	2.9
Ergonomics/Human Factors	3.2
Terminal Size	3.4
Financing	3.7

*1 = Very Important
5 = Not Important

PRIORITY ASSIGNMENT OF TERMINAL SELECTION CRITERIA BY DISTRIBUTORS

CRITERION	AVERAGE PRIORITY
Display Manufacturer	2.0
Price	2.2
Reliability	3.1
Maintenance	3.9
Terminal Size	5.3
Response Time	5.4
Ergonomics/Human Factors	5.6
Financing	7.1

TERMINAL SELECTION CRITERIA PRIORITIES FOR DISTRIBUTORS

CRITERION	PRIORITY								
	1	2	3	4	5	6	7	8	NO RESPONSE
Display Manufacturer	6	2	0	0	2	0	0	0	1
Price	3	5	0	1	1	0	0	0	1
Reliability	1	1	6	1	0	1	0	0	1
Terminal Size	0	0	1	1	2	3	1	0	3
Response Time	1	0	1	0	2	1	1	2	3
Maintenance	1	1	1	5	1	0	0	1	1
Ergonomics/Human Factors	0	0	0	0	1	0	4	3	3

INPUT

RELATIVE IMPORTANCE OF TERMINAL FEATURES TO DISTRIBUTORS

FEATURE	AVERAGE RANK*
Ambient Light Reflection	1.9
Separable Keyboard	2.0
Screen Size	2.1
Blinking Cursor	2.2
Tilt And Swivel	2.2
Reverse Video	2.4
Phosphor Color	2.5
Cursor Type	2.5
Audible Keystroke	2.7

*1 = Very Important
5 = Not Important

DISTRIBUTORS' COMMENTS ON IMPORTANCE OF TERMINAL FEATURES AND SELECTION FACTORS

Screen Size	• Large Size Preferred, Especially For Graphics Applications
Separable Keyboard	• Important To Many
Price	• Often Major Determinant
Maintenance	• Ease Of Maintenance Is Usually More Important Than Price
	• User Generally Stocks Spares
Display Manufacturer	• Deal Only With Reputable Manufacturers
	• Customers Specifically Ask For Brand Names
	• Manufacturer's Commitment And Resources Are Important

DISTRIBUTOR OPINIONS ON IMPORTANCE OF OPTIONS

OPTION	TODAY NUMBER	TODAY PERCENTAGE	IN 1986 NUMBER	IN 1986 PERCENTAGE
Printer Interface	5	45%	4	36%
Large Screen	4	36%	0	0%
Video	2	18%	1	9%

FACTORS ENHANCING ATTRACTIVENESS OF ASYNCHRONOUS DISPLAY TERMINALS TO DISTRIBUTORS

FACTOR	RESPONDENTS NUMBER	RESPONDENTS PERCENTAGE
Price	7	64%
Features, Performance	6	55%
Manufacturer's Reputation	5	45%
Reliability	2	18%
Graphics	2	18%

TERMINAL MAINTENANCE RESPONSIBILITY

MAINTAINER	HOW PROVIDED			TOTALS	
	DEPOT ONLY	ON-SITE ONLY	BOTH	NUMBER	PERCENTAGE
Distributor Only	–	1	3	4	36%
Distributor And Third Party	1	–	2	3	27%
Manufacturer And Distributor	1	–	1	2	18%
Manufacturer Only	1	–	–	1	9%
All Three	1	–	–	1	9%
TOTAL: Number	4	1	6	11	
TOTAL: Percentage	36%	9%	55%	100%	100%

INPUT

FINANCIAL SERVICES PROVIDED BY DISTRIBUTORS

RESPONDENT	INSTALLMENT PURCHASE	LEASING	RENTING
A	Yes	Yes	Yes
B	Yes	Yes	Yes
C	Yes	Yes	Yes
D	Yes	Yes	Yes
E	Rarely	Yes	Yes
F	No	Yes	Yes
G	No	No	Yes
H	No	No	No
I	No	No	No
J	No	No	No
K	No	No	No
TOTAL*: Number	5	6	7
TOTAL*: Percentage	45%	55%	64%

*Number Responding Yes

INPUT

OTHER SERVICES PROVIDED BY DISTRIBUTORS

RESPONDENT	INSTALLATION	TRAINING	CUSTOMIZE	OTHER
A	Yes	Yes	Yes	No
B	Yes	Yes	Yes	No
C	Yes	Rarely	Rarely	No
D	Yes	Rarely	Rarely	No
E	Yes	Yes	No	No
F	Yes	Not Needed	Rarely	No
G	Yes	Yes	Yes	No
H	Yes	Yes	Yes	No
I	Yes	No	Yes	No
J	Yes	Yes	No	No
K	Yes	Yes	No	Yes (Software)
TOTAL*: Number	11	9	8	1
TOTAL*: Percentage	100%	82%	73%	9%

*Number Responding Yes

SYSTEMS INTEGRATOR OPINIONS ON IMPORTANCE OF OPTIONS

	IMPORTANT TODAY	IMPORTANT HIGHER IN 1986
High Resolution Graphics	X	X
Color Graphics	X	X
Letter-Quality Printer	X	
Hard Copy Without Printer	X	
Greek Character Set	X	
APL Character Set		X
Special Function Keys	X	
Upper And Lower Case	X	
Detachable Keyboard		X
"Zoom" Feature		X
Graphics To Support CAD/CAM		X
Voice Response		X
Storage Capability		X
Software Control		X

DISTRIBUTORS' PERCEPTIONS OF MARKET SECTOR TRENDS 1981-1986

- More features, lower prices
- 132 columns (characters) per line
- Local computing capability
- Better software
- Larger screens
- Tilt screens
- Non-detachable keyboard